

Attachment 003

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING SEE ASME Y-14.5M		REVISIONS			
APPLICATION		ZONE	REV.	DESCRIPTION	DATE
NEXT ASSY	USED ON			INITIAL RELEASE	09/16/08
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DO NOT SCALE DRAWING	PREPARATION	DATE	DEPARTMENT OF THE NAVY		
	DESIGN CHECK	09/03/08	UNITED STATES MARINE CORPS		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MM	DRAWING CHECK		TITLE		
	DESIGN APPROVAL		ROUTER/SWITCH UNIT		
	DESIGN ACTIVITY CAGE CODE 01365		SIZE	CAGE CODE	DWGNO.
ONE PLACE (.X) ± N/A	CONTR NO.	A	01365	03002A1353	REV
TWO PLACES (.XX) ± .50mm					
THREE PLACES (.XXX) ± .100 mm					
ANGLES ± 1"					
MATERIAL NONE	SCALE		NONE	WEIGHT	NA
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## 1 SCOPE

### 1.1 Specification Scope

This drawing establishes the requirements for the router/switch provided for integration into the LAV-C2 vehicle. The router shall be a sealed box with slide rails and conform to a 482.6 mm (19" standard rack mount) footprint not to exceed 2 rack units in height to ensure a proper fit into the communications rack.

## 2 NOTES

### 2.1 Applicable Documents:

The referenced documents at the current revision level (unless otherwise indicated), apply as defined within this specification.

#### List of Standards

- MIL-STD-461E - REQUIREMENTS FOR THE CONTROL OF ELECTROMAGNETIC INTERFERENCE CHARACTERISTICS OF SUBSYSTEMS AND EQUIPMENT
- MIL-STD-188-124- GROUNDING, BONDING AND SHIELDING FOR COMMON LONG HAUL TACTICAL COMMUNICATION SYSTEMS INCLUDING GROUND BASED COMMUNICATIONS-ELECTRONICS FACILITIES AND EQUIPMENTS
- MIL-STD-130 - IDENTIFICATION MARKING OF U.S. MILITARY PROPERTY
- MIL-STD-1275- CHARACTERISTICS OF 28 VOLT DC ELECTRICAL SYSTEMS IN MILITARY VEHICLES
- MIL-STD-810 - ENVIRONMENTAL ENGINEERING CONSIDERATIONS AND LABORATORY TESTS

#### Handbooks

- MIL-HDBK454- GENERAL GUIDELINES FOR ELECTRONIC EQUIPMENT

#### Federal Standards

- N/A

#### Vendor Documents

- N/A

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### 3 REQUIREMENTS

#### 3.1 Mechanical Requirements

##### 3.1.1 Outline and Dimensions

##### 3.1.1.1 Router

Drawing goes here (PENDING VENDOR DRAWING)

Figure 1 Router  
03002A1353-1

##### 3.1.2 Finish

The part finish shall protect the device and meet all requirements after exposure to any environments required herein.

##### 3.1.3 Marking

Devices shall be marked with part number 01365-03002A1353-1 IAW MIL-STD-130.

Devices shall be serialized IAW MIL-STD-130.

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### 3.2 Performance Requirements

#### 3.2.1 Console / Aux Ports

The console / aux ports shall be located in the front of the unit. The ports shall consist of a single DB-9 and a single RJ-45 port in support of this functionality. The ports are to be covered, capped, and tethered IAW specified environmental requirements.

#### 3.2.2 Ethernet Ports

All Ethernet Ports shall be located in the rear of the enclosure (not to include ports in 3.2.1). The connector type shall be a D38999124WH35SN bundle. There shall be 3 D38999124WH35SN bundles to support all Ethernet Ports (not to include ports in 3.2.1). Unless otherwise specified, the ports shall be evenly distributed among the 3 D38999124WH35SN to the largest extent possible.

#### 3.2.3 Cisco Equipment

The router / switch unit shall be managed via a Cisco operating system.

#### 3.2.4 Router DRAM

The Router DRAM shall be the maximum available dictated by the unit selected for integration. TO BE COMPLETED BY SUPPLIER.

#### 3.2.5 Router Flash

The Router Flash shall be the maximum available dictated by the unit selected for integration. TO BE COMPLETED BY SUPPLIER.

#### 3.2.6 Router Port Density

Router Port Density shall be 4 Fast Ethernet ports.

#### 3.2.7 Switch Port Density

Switch Port Density shall be 24 Fast Ethernet ports and 2 Gigabit Ethernet ports.

#### 3.2.8 Switch DRAM

The Switch DRAM shall be the maximum available dictated by the unit selected for integration. TO BE COMPLETED BY SUPPLIER.

#### 3.2.9 Indicator Lights

The unit shall have lights on the front of the unit that indicate power (green) and indicate activity (amber).

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### 3.3 Electrical Requirements

#### 3.3.1 Power Consumption

Power consumption shall not exceed 100w

#### 3.3.2 Power Input

The power input shall function between 18 and 32 VDC IAW MIL-STD-1275.

#### 3.3.3 Power Interface

The power interface shall conform to the 038999 standard. SUPPLIER TO SPECIFY WHEN KNOWN

#### 3.3.4 Electromagnetic Interference (EMI)

All EMI characteristics shall be IAW the following sections of MIL-STD-461E

##### 3.3.4.1 CE102

##### 3.3.4.2 CE106

##### 3.3.4.3 CS101

##### 3.3.4.4 CS103

##### 3.3.4.5 CS104

##### 3.3.4.6 CS105

##### 3.3.4.7 CS114

##### 3.3.4.8 CS115

##### 3.3.4.9 CS116

##### 3.3.4.10 RE102

##### 3.3.4.11 RE103

#### 3.3.5 Grounding, Bonding, Shielding

All Grounding, Bonding, and Shielding shall be IAW MIL-STD-188-124

#### 3.3.6 General Guidelines for Electronic Equipment

All Electronic Equipment shall be IAW the following sections of MIL-HDBK-454

##### 3.3.6.1 Guideline 1 Safety Design Criteria

##### 3.3.6.2 Guideline 4 Fungus Inert Materials

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- 3.3.6.3 Guideline 5 Soldering
- 3.3.6.4 Guideline 9 Workmanship
- 3.3.6.5 Guideline 10 Electrical Connectors
- 3.3.6.6 Guideline 11 Insulating Materials, Electrical
- 3.3.6.7 Guideline 12 Fastener Hardware
- 3.3.6.8 Guideline 15 Metals, Corrosion Resistance
- 3.3.6.9 Guideline 19 Terminations
- 3.3.6.10 Guideline 20 Wire, Hookup, Internal
- 3.3.6.11 Guideline 28 Controls
- 3.3.6.12 Guideline 33 Resistors
- 3.3.6.13 Guideline 35 Reliability
- 3.3.6.14 Guideline 39 Fuses and Fuse Holders
- 3.3.6.15 Guideline 50 Indicator Lights
- 3.3.6.16 Guideline 54 Maintainability
- 3.3.6.17 Guideline 55 Enclosures
- 3.3.6.18 Guideline 58 Switches
- 3.3.6.19 Guideline 61 Electromagnetic Interference Control
- 3.3.6.20 Guideline 67 Marking
- 3.3.6.21 Guideline 69 Internal Wiring Practices
- 3.3.6.22 Guideline 70 Electrical Filters
- 3.3.6.23 Guideline 74 Grounding, Bonding and Shielding

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### 3.4 Environmental Requirements

The unit shall be capable of meeting all electrical requirements following exposure to any or all of the environments specified in the following paragraphs.

#### 3.4.1 Temperature Range

Storage: -51°C to +71°C (-60°F to +160°F)

Operating: -32°C to +52°C (-25°F to +125°F)

#### 3.4.2 High Temperature

The unit shall be IAW MIL-STD-810, Section 501.4 Hot Climatic Category, Procedure 1 Storage and Procedure 2 Operation.

#### 3.4.3 Low Temperature

The unit shall be IAW MIL-STD-810, Section 502.4 Procedure 1 Storage and Procedure 2 Operation.

#### 3.4.4 Temperature Shock

The unit shall be IAW MIL-STD-810, Section 503.4, 0°F to +70°F for duration of 10 minutes and +120°F to +70°F for duration of 10 minutes.

#### 3.4.5 Low Pressure

The unit shall be IAW MIL-STD-810, Section 500.4, Procedure 1 Storage/Air Transport and Procedure 4 Explosive Decompression.

#### 3.4.6 Rain

The unit shall be IAW MIL-STD-810, Section 506.4, Procedure 2 Water Tightness.

#### 3.4.7 Humidity

The unit shall be IAW MIL-STD-810, Section 507.4, with a minimum time of 10 days.

#### 3.4.8 Fungus

The unit shall be IAW MIL-STD-810, Section 508.5, US (2.2.2), time of 28 to 84 days.

#### 3.4.9 Salt Fog

The unit shall be IAW MIL-STD-810, Section 509.4, 4 days duration.

#### 3.4.10 Sand and Dust

The unit shall be IAW MIL-STD-810, Section 510.4, Procedure 1 Blowing dust 13 hours using <105J1m particle size.

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#### 3.4.11 Vibration

The unit shall be IAW MIL-STD-810, Section 514.5, Procedure 1 General Vibration, Wheeled Vehicle

#### 3.4.12 Acoustic Noise

The unit shall be IAW MIL-STD-810, Section 516.5, Procedure 1 Diffuse field acoustic noise and Procedure 3 Cavity resonance acoustic noise.

#### 3.4.13 Shock

The unit shall be IAW MIL-STD-810, Section 516.5, Procedure 1 Functional shock and Procedure 2 Materiel to be packaged and Procedure 3 Fragility and Procedure 4 Transit Drop and Procedure 5 Crash hazard and Procedure 6 Bench handling.

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#### 4 QUALITY ASSURANCE PROVISIONS

##### 4.1 Quality Assurance Program

The Supplier shall implement and maintain a Quality System compliant to ISO 9001:2000, AS9100 or equivalent. The Supplier shall document the Quality Assurance System in a Quality Assurance Manual, which shall be capable of satisfying the above requirements and be made available for review at Buyer's request.

The Supplier shall explicitly identify by paragraph, any exceptions taken to the Quality program requirements. The Supplier shall be prepared to justify these exceptions and all exceptions shall be subject to Buyer approval.

Key Characteristics shall be a major part of this Program. Key Characteristics for a part, subassembly, or system are those selected geometrical, material properties, functional and/or cosmetic features, which are measurable, whose variation control is necessary in meeting Buyer requirements and enhancing Buyer satisfaction.

Documented procedures shall be in place and implemented for the following activities as a minimum:

- CONTROL OF DOCUMENTS
- CONTROL OF RECORDS
- INTERNAL AUDITS
- CONTROL OF NONCONFORMANCES
- CORRECTIVE ACTION
- PREVENTIVE ACTION

##### 4.2 Corrective Action System

The Supplier shall document and implement a corrective action system for process and product non-conformance. The system shall be closed-loop, ensuring that problems are reported, recorded, tracked, and resolved in a timely manner. An analysis shall be performed to detect trends in the non-conformances identified. Corrective actions shall be evaluated to determine if problems have been resolved, adverse trends have been reversed, and changes have been implemented without introducing additional problems.

##### 4.3 Manufacturing Controls Workmanship

The Supplier shall maintain Workmanship Standards and work instructions in accordance with ISO 9001:2000 as a minimum, workmanship shall be performed in accordance with MIL-HDBK-454/ANSI J-STD-001 and SAE-AS50881.

##### 4.4 Corrosion Control

The Supplier shall apply corrosion prevention and control programs that assure the use of best practices for controlling and preventing corrosion in the product during its specified service life. This program activity shall be made available for review by the contractor upon request.

##### 4.5 Nonconforming Material

The Supplier shall define control of Non-Conforming Material in accordance with ISO 9001. No Material Review Board (MRB) authority is granted and authority cannot be flowed to sub tier Suppliers. Requests for authorization of use-as-is or to perform repairs shall be requested through the appropriate contract-to-contract representatives. Disposition time by the Buyer will vary with the severity of the non-conformance and the required analysis.

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#### 4.6 Design and Development

Design and development shall be planned and controlled. Stages/phases of design and development (sequence, mandatory steps, and configuration control). Reviews, verifications, and validation activities, along with the responsibilities and authorities of those involved shall be identified.

Design inputs shall be defined, recorded, and maintained including: Functional and performance requirements, statutory/regulatory requirements, necessary information from prior designs, or other essential requirements. Inputs shall be reviewed for adequacy.

Design outputs shall be documented and provide: traceability to input requirements; information for purchasing, production, and servicing; contain or reference acceptance criteria; define characteristics essential for safe and proper use; identify key characteristics. Output documents shall be approved prior to release. Data pertinent to the product shall be defined to allow product to be identified, manufactured, inspected, used, and maintained.

Verifications that outputs meet inputs shall be performed. Records of the review and necessary action shall be maintained.

Validation that the product is capable of intended use shall be conducted prior to delivery or implementation. Record of validation and necessary actions shall be maintained. This validation follows successful verification activity and is performed on the final product under defined operating conditions (e.g. Environmental/Qualification Test, Operation/Technical Evaluation Test).

Documented evidence shall be in place for completion of verification and validation (e.g. reports, calculation, test results). Design and Development, Verification and Validation testing shall be planned, controlled, reviewed and documented. Documents shall include:

- Plans/specification which identify product, resources, objectives, conditions, parameter, and acceptance requirements
- Procedures which identify methods used and records
- Test configuration, how tests are observed and are acceptance criteria met.

Design changes shall be identified and recorded. This includes evaluation of effect on constituent parts and delivered product. Changes shall be reviewed, verified, validated, and approved prior to implementation. Records of changes and necessary actions shall be maintained. Change processes shall include regulatory agencies/buyer approval where required.

#### 4.7 Product Verification and Acceptance

During product sell-off, the Supplier shall provide the contractor with technical insight to ascertain that: (1) drawings and specifications are completed, and the product matches the documentation; (2) in-process and final workmanship inspections have been completed and the product complies with designated requirements and workmanship standards (3) The Supplier shall have a process that is compatible with Government Deficiency Reporting System for handling use complaints with fielded products.

#### 4.8 Measuring, Test Equipment and Tooling

The Supplier's Calibration Control System shall comply with ISO 10012 and/or ANSI/NCSL Z540. The Supplier's Quality Assurance organization shall be responsible for ensuring that control of all test equipment hardware and software is maintained. Procedures shall define the requirements for build, verification, certification and use of Special Test Equipment.

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#### 4.9 Acceptance Testing

Acceptance testing shall be performed on each piece of equipment, prior to delivery, to Buyer approved acceptance test procedures.

#### 4.10 Inspection and Test Records

The Supplier shall retain copies of all inspection and test records for a period of at least 3 years after the date of final delivery. A documented procedure shall be in place for control of records.

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## 5 APPROVED SOURCE(S) OF SUPPLY

Only the item described on this drawing, when procured from the Supplier(s) listed herein, is approved by the Buyer for use in the application(s) specified herein. A substitute item shall not be used without prior approval by the Buyer.

Identification of the approved source(s) of supply hereon is not to be construed as a guarantee of present or continued availability as a source for the item described on the drawing.

### 5.1 Approved Source(s) of Supply and Part Number Cross Reference

**Table 1. Part Number / Supplier Information**

Part Number	Supplier Part Number	Supplier Name	CAGE Code	Address
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